IN THE CLAIMS:

Please amend the claims as follows.

1-25. Canceled

26. (Previously Presented) An apparatus comprising:

a first data array;

a second data array coupled to the first data array; and

a merged tag array coupled to the second data array, wherein the merged tag array is to store directory information for the first data array and the second data array.

27. (Previously Presented) The apparatus of claim 26, wherein the merged tag array is further coupled to a processor state control component.

28. (Previously Presented) The apparatus of claim 26, wherein:

the first data array contains a plurality of sets and the second data array contains a plurality of sets;

the merged tag array contains a plurality of entries, each of which corresponding to a set in the first data array and to one or more sets in the second data array; and

each of the plurality of entries in the merged tag array contains a presence field indicating whether the corresponding set in the second data array contains a copy of information present in a corresponding set in the first data array.

29. (Previously Presented) The apparatus of claim 28, wherein:

the second data array further contains a plurality of ways;

the merged tag array further contains a presence-way field and a plurality of tag fields, each tag field corresponding to a second data array way; and

each presence-way field indicates which, if any, second data array way contains a copy of information present in a corresponding set in the first data array.

30. (Previously Presented) The apparatus of claim 29, further comprising a single level translation lookaside buffer coupled to the merged tag array, wherein the single level translation lookaside buffer contains all available memory address translations.

31. (Previously Presented) A merged tag array comprising:

a first directory field containing information about the contents of a corresponding set in a first data array; and

a second directory field containing information about the contents of a corresponding set in a second data array.

32. (Previously Presented) The merged tag array of claim 31, wherein:

the first directory field comprises a presence field to indicate whether a corresponding set in the first data array contains the same information as a corresponding set in the second data array; and

the second directory field comprises a tag field corresponding to sets in the second data array.

33. (Previously Presented) The merged tag array of claim 32, wherein:

the second data array contains a plurality of ways;

each entry in the merged tag array contains a plurality of second directory fields, each of which correspond to a different way in the second data array; and

each entry in the merged tag array further contains a plurality of presence-way fields to indicate which way in the second data array contains a copy of information present in a corresponding set in the first data array.

34. (Currently Amended) A system, comprising:

a first array to store data;

a second array to store data, wherein the second array is coupled to the first array; and

a third array to store tags for both the first array and the second array.

35. (Previously Presented) The system of claim 34, wherein a tag stored in the third array identifies the contents of a set in the first array and the second array.

36. (Currently Amended) The system of claim 34, wherein the third array is configured to contain a plurality of entries, and wherein each entry in the third array contains a presence bit to indicate whether a corresponding set in the first array contains the same information as a corresponding set in the second array.

37. (Currently Amended) The system of claim 36, wherein the second array contains a plurality of ways, and wherein each entry in the ~~tag~~ third array contains a presence-way bit to indicate which way in the second array, if any, contains information that is present in a corresponding set in the first array.

38. (Previously Presented) A method comprising:

issuing a request for information to a first data array, a second data array, and a merged tag array, wherein the merged tag array stores directory information for the first data array and the second data array;

determining from the merged tag array whether the request generated a cache hit in the first data array or second data array; and

providing information from the first data array or second data array based on the results of said determination.

39. (Previously Presented) The method of claim 38, wherein determining if the request generated a cache hit for the first data array comprises:

checking a presence field in an entry of the merged tag array corresponding to the request to determine if a corresponding set of the first data array contains a copy of information present in one of the corresponding sets of the second data array; and

determining if a copy of the requested information is contained in a set of the second data array that both corresponds to the request and contains a copy of the information present in a corresponding set of the first data array.

40. (Previously Presented) The method of claim 39, wherein:

the second data array contains a plurality of ways; and

determining if a set in the second data array contains a copy of the information present in a corresponding set of the first data array comprises determining if a tag identified by a presence-way field matches a portion of the memory address requested.

41. (Previously Presented) The method of claim 38, further comprising:

sending the request for information to a single level translation lookaside buffer at substantially the same time as it is sent to the first data array, second data array, and merged tag array, wherein the single level translation lookaside buffer contains all available memory address translations;

checking the single level transaction lookaside buffer to determine whether the request is authorized; and

transferring control to an exception handler if the request is not authorized.

42. (Previously Presented) An system comprising:

a central processing unit;

a first data array coupled to the central processing unit;

a second data array coupled to the central processing unit and the first data array;

a merged tag array coupled to the central processing unit and the second data array, wherein the merged tag array is to store directory information for the first data array and the second data array; and

a system random access memory coupled to the merged tag array and the second data array.

43. (Previously Presented) The system of claim 42, wherein the central processing unit includes a processor state control component.

44. (Previously Presented) The system of claim 42, wherein the system further comprises a merged translation lookaside buffer coupled to the merged tag array.